Directorate of
Intelligence

[redacted]

Key Conclusions About Present and Future Soviet Space Missions [redacted]

A Reference Aid

[redacted]

[redacted]

June 1983

[redacted]

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Exemptions: (b)(3), (b)(1)

Contents

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Key Conclusions About Present and Future Soviet Space Missions [redacted]

Manned Spacecraft Program

Mission

A major thrust of the Soviet manned space program appears to be the establishment of a continuous manned presence on orbiting space stations.[1] The manned missions are used for scientific and military research and reconnaissance. The program has also included non-Soviet crews, which improves the Soviet international image. [redacted]

Present

Salyut
- Manned space station for performing a wide variety of military and civil functions.
- About one-third the size of the US Skylab.
- Expected lifetime of greater than four years.
- Can be linked to other segments to form a larger station. [redacted]

Progress
- Unmanned, automated resupply vehicle used to resupply Salyut space stations with expendables and equipment.
- Can deliver 2,300 kilograms of payload into a near-Earth orbit.
- Destroyed in atmosphere at end of mission. [redacted]

Soyuz-T
- New improved ferry vehicle for transporting cosmonauts/materials to space stations.
- Can carry three cosmonauts versus two for older Soyuz.
- Deorbited and recovered after approximately 100 days of use. [redacted]

Future

Military Space Station
- First manned flight possible in 1983.
- Unmanned test flights in 1977 (Cosmos 929) and 1981 (Cosmos 1267); [redacted]
- Manned flight (Cosmos 1443) in summer 1983 while docked with Salyut-7.
- About 70 percent the size of Salyut. [redacted]

[redacted]

[redacted]

Reusable Space Plane
- — Orbital test to the Indian Ocean in June 1982 and March 1983 of what may have been a scale model.
- — If under development, first full-scale flight possibly in 1983.
- — Small, compared to size of US shuttle.
- — Possibly for reconnaissance or will serve as a ferry vehicle.
- — Probable capacity for two to four cosmonauts and/or limited amount of cargo.

Reusable Space Transportation System
- — Similar in size and configuration to the US shuttle.
- — Earliest expected flight in 1986.
- — Captive flight test appeared to have begun in early 1983.
- — Orbital tests of model mentioned above may be part of technology tests for shuttle program.

Modular Space Complex (Up to 12 Cosmonauts)
- — Two unmanned modules docked in 1981 in a test of forming a modular complex.
- — Three or four modules will be docked to a central core (possibly Salyut-8) possibly in 1984.
- — Habitable volume comparable with that of US Skylab.

Large Space Station (Up to 20 Cosmonauts)
- — Habitable volume about the same as that of US Skylab.
- — Launch in late 1980s.
- — Could perform a variety of civil and military experiments.

Space Base (Up to 100 Cosmonauts)
- — Possibly in 1990s.
- — Formed by docking multiple, large space stations.

Manned Expeditions
- — Possible manned lunar mission in early 1990s.
- — Some possibility of manned fly-by mission to Mars in mid-to-late 1990s.

New Resupply Vehicle
- — To be used with modular complex about 1985.
- — Based on Cosmos 929/1267-type vehicle.
- — Will replace Progress and possibly its payload capability.

Pages: 3, 4

Exemptions: (b)(3), (b)(3)

Communications Satellites

Mission

Soviet communications satellites relay military, intelligence, and civil communications.[4] The Soviets will continue to increase the availability of military communications satellites through the use of highly mobile ground terminals. As future communication networks become operational, the Soviets will become increasingly dependent on satellite systems for global military command, control, and communications [redacted]

Present

Molniya-1 Network
- Full network consists of eight satellites in semisynchronous orbit.
- Two transponders on board each satellite—one primary and one backup.
- Used for military communications [redacted]

Molniya-3 Network
- Full network consists of four satellites in semisynchronous orbit.
- Uses three transponders.
- Used for military and civil communications [redacted]

Stationar Network
- Network application filed with International Frequency Registration Board/International Telecommunications Union (IFRB/ITU);[5] network to consist of satellites in 17 geostationary positions.
- Two to three years behind stated deployment schedule.
- Consists of the following satellites:
  - Ekran satellites, which provide daily civil TV service from Moscow to the Soviet Northern and Far East regions.
  - Gorizont satellites, which provide relay of civil communications for the USSR and Intersputnik subscribers; one satellite services Washington/Moscow hotline; also contains Volna and Luch transponders.
  - Raduga satellites, which provide relay of military and civil communications.

[redacted]

Volna Network
- Network application filed with IFRB/ITU; network to consist of satellites in eight geostationary positions.
- Two years behind schedule; initial deployment scheduled for 1980.
- First satellite in Volna network launched in March 1982.
- Provides relay of civil aircraft and ship communications. [redacted]

[redacted]

Luch Network
- Network application filed with IFRB/ITU; network to consist of satellites in four geostationary positions.
- Scheduled date for initial deployment was 1981.
- First satellite in Luch network was launched in March 1982, one year behind schedule.
- Provides relay of civil communications [redacted]

[redacted]

Radio Satellites
- 10 satellites launched to date.
- For relay of communications from ham radio operators [redacted]

Future

Satellite Data Relay System (SDRS)
- Network application filed with IFRB/ITU in July 1981.
- First launch scheduled for December 1983; delay estimated until 1985.
- Three satellites in geostationary orbit.
- Relay between satellites in near-Earth orbit and ground sites in USSR.
- Possible use for data relay from real-time, electro-optical photoreconnaissance and/or communications with manned space stations when network is deployed.

[redacted]

Potok
- Network application filed with IFRB/ITU in July 1981.
- About one year behind schedule; first launch expected in 1983.
- Relay of ground-to-ground digital data [redacted]

[redacted]

[redacted]

Gals

— Network application filed with IFRB/ITU in January 1978.
— Scheduled for operation in 1979; first launch expected about 1985.
— Six-satellite network in geostationary orbit.
— Will serve military communication needs.
— Will be a part of multiple-communication payload spacecraft [redacted]

Luch P

— Network application filed with IFRB/ITU in January 1978.
— Scheduled date for initial deployment was 1981.
— First launch expected about 1985.
— Four satellites in geostationary orbit.
— For military communication use.
— Probably will be a part of multiple-communication payload spacecraft [redacted]

[redacted]

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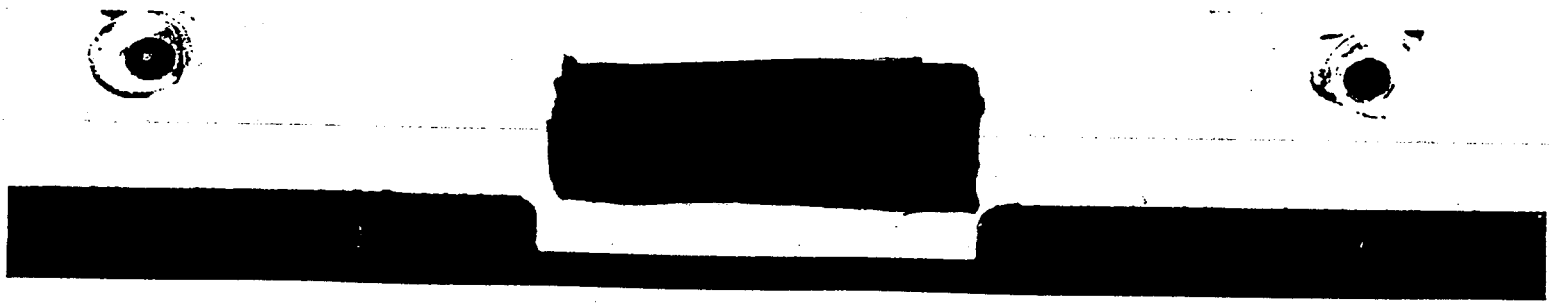

Photoreconnaissance Satellites

Mission

These satellites take high-resolution photography of known high-interest military and civil targets worldwide and conduct small-area search with lower resolution photography of additional high-interest activities.

Present

High-Resolution System
- 0.3- to 0.6 meter estimated resolution with small-area coverage (15-km swath).
- Deorbits two buckets during nominal 30- or 45-day mission with remaining payload deorbited at mission's end.
- About 10 satellites launched annually

Medium-Resolution System
- 1.5- to 3.0-meter estimated resolution used for selected area search (70-km swath) when used at high altitude (about 410 km).
- 14-day nominal mission.
- 1.0- to 1.5-meter estimated resolution used to augment high-resolution systems and perform limited search (50-km swath) when used at low altitude (about 230 km).
- About 20 satellites launched annually

Earth Resource System
- Multispectral, low-resolution system; about 8- to 13-meter estimated resolution.
- 13-day nominal mission.
- Broad-area coverage.
- Used extensively to monitor Soviet grain harvest.
- About six satellites launched annually during growing season (April to October).

Photo/Geophysical System
- Provides mapping, geodesy, and geophysical studies data.
- Low-resolution system; about 8- to 13-meter estimated resolution.
- Broad-area coverage.
- Two satellites launched annually, each with mission life of about 13 days.

Future

New Photo/Geophysical Satellite System
— Experimental system flown in 1981 [redacted]
— Probably operational in 1983.

Electro-Optical System
— Near-real-time system.
— Extended lifetime, possibly greater than one year.
[redacted]
— Cosmos 1426, launched in December 1982, appears to have been test version.
[redacted]

[redacted]

[redacted]

Ocean Reconnaissance Satellites

Mission

Ocean reconnaissance satellites provide real-time targeting data to Soviet combatants carrying antiship weapons and provide selected surveillance of NATO ships.

[redacted]

Present

Radar Ocean Reconnaissance Satellite (RORSAT)

- Active radar system powered by a nuclear reactor.
- High-altitude storage system for spent nuclear reactors; two failures to date.
- High probability of detecting aircraft carrier–sized ships in fair weather.
- Detection of destroyer-sized ships highly probable but only under the best of conditions (illuminated length-on in calm seas).
- Cannot detect any ships in high seas or in rain.

[redacted]

- Real-time capability for Soviet naval combatants carrying antiship missiles.
- Two- to four-month mission duration.

ELINT Ocean Reconnaissance Satellite (EORSAT)

- Collects against US and NATO naval radars [redacted]
- Average probability of detection about 40 percent.

[redacted]

- Real-time capability for Soviet naval combatants carrying antiship missiles [redacted]

Future

Advanced RORSAT

- No program yet defined.
- If developed, earliest flight in late 1980s.
- Could have higher probability of detection with improved signal-to-noise discrimination and have increased field of view.
- May use satellite data relay system to provide data to Moscow in real time for battle management [redacted]

[redacted]

[redacted]

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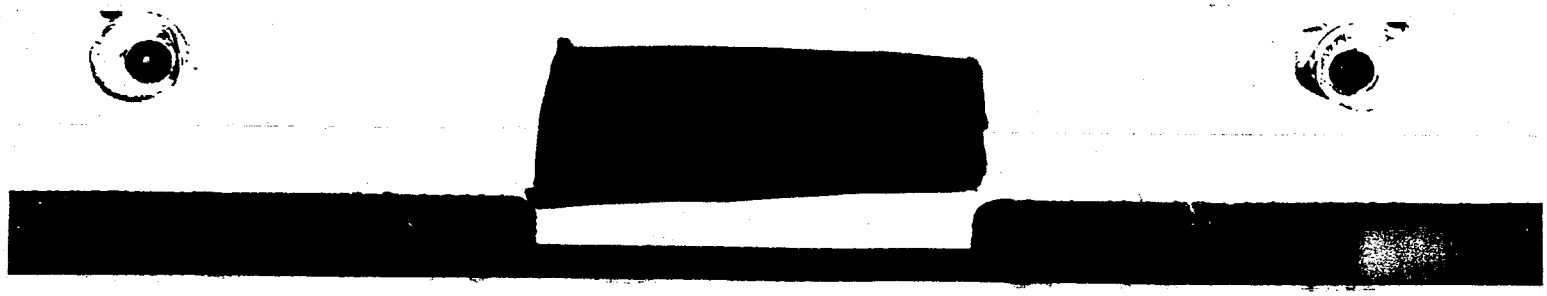


Electronic Intelligence Satellites

Mission

These Soviet satellites intercept radar signals and sample electronic environment, with some capable of geolocating emitters [redacted]

Present

ELINT 2
- Worldwide coverage (74°N to 74°S).
- No real-time capability.
- No capability to locate emitters.

[redacted]

- May be phased out in 1983 (only one satellite active) [redacted]

ELINT 3
- Location accuracy of 8 to 220 km.
- Worldwide coverage (81°N to 81°S).
- No real-time capabilities.
- Five to six satellites in network.

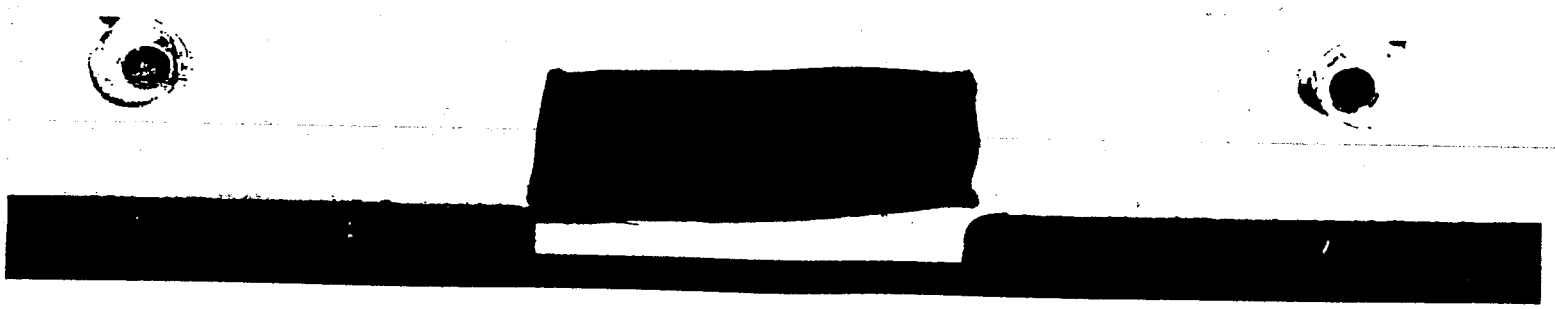
[redacted]

Future

High-Altitude ELINT System
- No program yet defined.
- If developed, earliest flight possibly in early 1990s.
- Could have increased frequency coverage.

[redacted]

[redacted]



Radar Support Satellites

Mission

The satellites are used to calibrate ABM radars, perform command system checkout, and perform other R&D activities.

Present

RADSAT-2s
- Used to calibrate Soviet ABM radars.
- Can be used to calibrate other Soviet radars with a space tracking capability.

RADSAT-3s
- Four types of RADSAT-3s with some common functions but with different subsystems.

Cosmos 1146–type Satellite

- Possibly used as radar power calibration targets.
- Probable fourth-generation radar support satellite (RADSAT-4)

Future

No new systems projected.

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Naval Support Satellites

Mission

Soviet naval support satellites allow users to determine their positions.

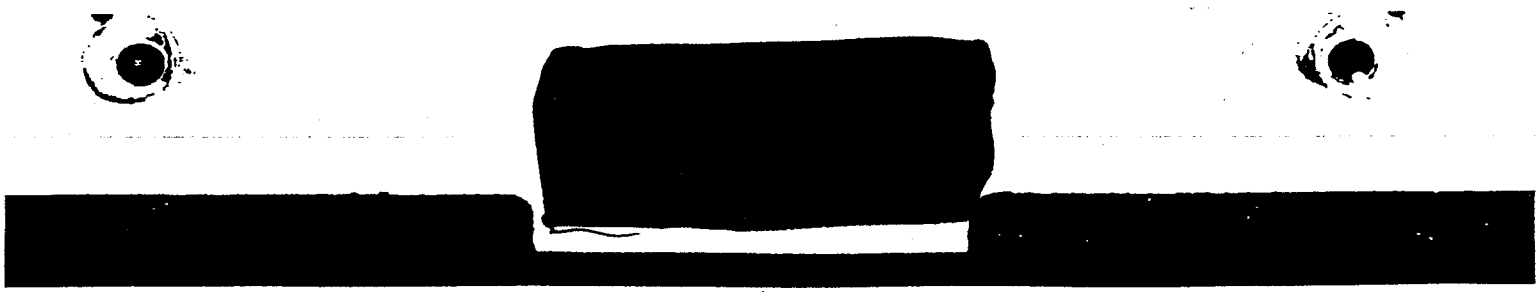
Present

Second-Generation Naval Support Satellite (NAVSAT 2) Network
— Consists of six satellites in near-Earth orbit.

Third-Generation Naval Support Satellite (NAVSAT 3) Network
— Consists of four satellites in near-Earth orbit.
— Soviets publicly stated satellites are for civil use
— Broadcasts only VHF/UHF signals with same accuracy as NAVSAT 2

Future

Glonass Network
— Network application filed with IFRB/ITU in February 1982; network to consist of nine satellites in 12-hour, 20,000-km orbits.
— Application states satellites will be for civil aircraft and ship use but could also serve a wide variety of military platforms/weapon systems.
— First set of three developmental satellites launched in October 1982 by a single space launch vehicle.
— Accuracy of locating positions unknown.
— System will be similar to US NAVSTAR (GPS) system



Launch-Detection Satellites

Mission

The Soviet launch-detection satellites provide early warning of US ICBM attack.[redacted]

Present

Launch-Detection System

- Full network consists of nine satellites in semisynchronous orbit.
- Provides continuous and some redundant real-time coverage of US ICBM fields.
- Provides no coverage of ocean areas for SLBM detection.
- Provides about 30 minutes warning and may be able to provide limited attack assessment information.
- Modified versions of current sensors being flown; changes evolutionary in nature and intended to improve satellite sensitivity.[redacted]

Future

SLBM Launch Detection

- Probable development of a new system to provide coverage of the greatly expanded patrol areas for US SLBM-carrying submarines.
- Satellite warning of such launches to precede current ground-based warning systems by up to 15 minutes.
- System may also provide coverage of land-based ballistic missiles launched from Europe or the People's Republic of China.
- First test flight possible in mid-to-late 1980s.[redacted]

Aircraft Detection

- System for detection and identification of large, cruise missile–carrying aircraft.

[redacted]

- Deployment probably not before 1995.[redacted]

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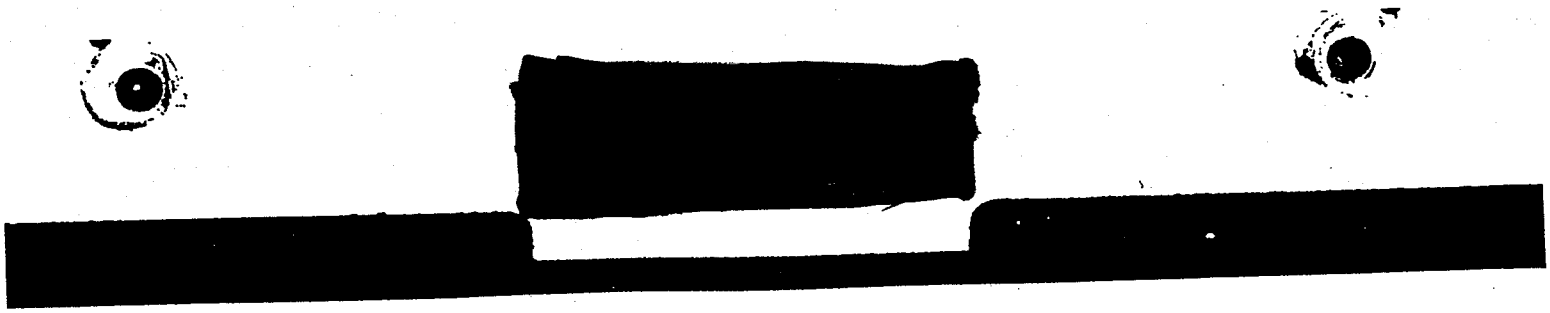

Scientific Satellites and Probes

Mission

The Soviets currently have only a few satellites dedicated to scientific or research missions. In most of these missions, the resulting data are shared with other countries. The Soviets use these missions to enhance their international image, gain access to Western technology, and gather scientific data.

Present

Meteor
- Provides meteorological data for civil weather forecasting, meteorological and atmospheric studies, and military support.
- Supplies real-time day and night cloud cover data only to users whose antennas are in view of the satellite.

Meteor-Priroda
- Experimental earth resources remote-sensing system.
- Resolution of some tested sensors comparable to that of the US LANDSAT-4.

Interplanetary
- Soviet interest presently confined to Venus.
- Nine successful Venus landings.
- Recent missions carried experiments for other countries.

Suborbital Scientific Programs
- Used in upper atmospheric, solar, and geophysical studies.

Intercosmos
- Cooperative ventures with other countries.
- Carries remote-sensing, oceanographic, atmospheric, and geophysical payloads.

Prognoz
- Highly elliptical four-day orbit.
- Studies sun-earth interactions.

Oceanographic
- Two successful missions out of three attempts.
- Carried sensors for monitoring sea states.

Ultraviolet Astronomical Telescope (UFT)
- Joint Soviet-French venture.
- Launched in March 1983.

Future

- Operational geosynchronous meteorological satellite about 1984.
- Joint Soviet-French venture in launch of two spacecraft in 1984 to study Venus and Halley's Comet—by far the most sophisticated payloads going to Halley.
- Continued Intercosmos activity.
- Continued suborbital geophysical and solar studies.
- New Intershock series will replace Prognoz for solar physics/magnetospheric studies, possibly in 1983.
- Launch of Franco-Soviet Gamma-1 gamma-ray observatory in 1984.
- Launch of cooperative Interball two-satellite system for magnetospheric and ionospheric studies in 1986 to 1987.
- Possible 1980s launch of a lunar polar orbiter to aid in possible missions to far side of the moon.
- Possible sample-return mission to the far side of the moon [redacted]